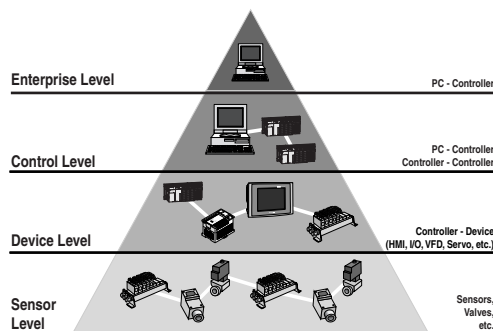


Overview of Networks

When choosing a network solution a number of criteria may come into play. Topology, bus speed, communications distance, redundancy, data transfer capabilities, the number of nodes the network can support, deterministic capabilities, cost, ease-of-use, third party support to name just a few.

But most importantly, will it work well within your specific application? When developing our family of network products, we've taken all these factors into consideration — assuring users, all the necessary features and capabilities are packaged into the network product they have selected.

From top to bottom in the network hierarchy, from open architecture protocols to seamless engineered systems, from sensor to enterprise level, we offer a host of powerful network solutions for users to choose from. The one common denominator with all Mitsubishi Electric network products is unmatched performance. In relative performance data comparisons, all our network solutions meet, exceed or dramatically outperform most competitive networks available on the global market today.



While bus speed is a critical factor in measuring performance, there are several other reasons why Mitsubishi Electric network solutions excel over others. Easy connectivity, seamless integration, synergistic performance characteristics of a Mitsubishi Electric controlled network and above all else — maximum levels of uptime without sacrificing performance or productivity. Whether you have an entire factory floor or just an individual machine to network, you'll find Mitsubishi Electric's expansive range of network options to be the superior choice.

Enterprise Level

Specifications	Ethernet (100base-TX)	Ethernet (10base-T)	Ethernet (10base-5)	Ethernet (10base-2)
Network Level	Enterprise	Enterprise	Enterprise	Enterprise
Architecture	Star (via hub)	Star (via hub)	Bus	Bus
Communications Media	Cat. 5 (UTP/STP)	Cat. 5 (UTP/STP)	via AUI transceiver	Coax
Transmission Speed	100Mbit/s	10Mbit/s	10Mbit/s	10Mbit/s
Number of Stations	Two levels of cascade connections via hubs	Four levels of cascade connections via hubs	100/segment	30/segment
Maximum Distance (m)	100/segment	100/segment	500/segment	185/segment
Master Module	N/A	N/A	N/A	N/A
Remote I/O	N/A	N/A	N/A	N/A

Control Level

Specifications	CC-Link IE	MELSECNET/H
Network Level	Control	Control
Architecture	Loop	Bus/Loop
Communications Media	Fiber	Fiber/Coax
Transmission Speed	1000Mbit/s	10/25Mbit/s (depends on module used)
Number of Stations	120	64 (fiber)/32 (coax)
Maximum Distance (m)	66,000	30,000 (fiber)/500 (coax)
Master Module	Yes (and local)	Yes (and local)
Remote I/O	No	Yes

Note: MELSECNET/H is backwards compatible with MELSECNET/10. CC-Link IE was formerly known as MELSECNET/G.

Device Level

Specifications	CC-Link	DeviceNet	PROFIBUS-DP	MODBUS/TCP	MODBUS/RTU
Network Level	Device	Device	Device	Device	Device
Architecture	Bus	Bus	Bus	Star (via hub)	Bus
Communications Media	STP	Thick/thin trunkline	STP	Cat. 5 (UTP/STP)	STP
Transmission Speed	10Mbit/s (all devices)	0.5Mbit/s	12Mbit/s (depends on devices used)	100Mbit/s	115kbps
Number of Stations	64	64	60	64	64
Maximum Distance (m)	1200/segment (extend up to 13.2km with repeaters)	500	1200	100	1200
Master Module	Yes (and local)	Yes (and slave)	Yes	Yes (and slave)	Yes (and slave)
Remote I/O	Yes	Yes	Yes	Yes	Yes

Sensor Level

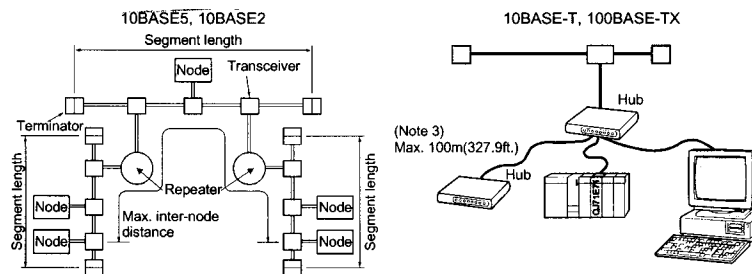
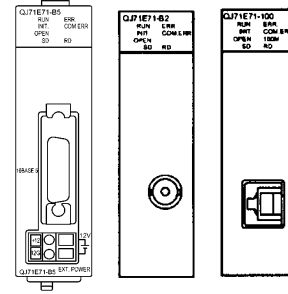
Specifications	CC-Link/LT	AS-i
Network Level	Sensor	Sensor
Architecture	Bus	Star, bus or tree
Communications Media	Dedicated mechanically keyed cable	
Transmission Speed	2.5Mbit/s	172kbit/s
Number of Stations	64	31
Maximum Distance (m)	700	100
Master Module	Yes	Yes
Remote I/O	Yes	Yes

MELSEC Q Series / iQ Ethernet Enterprise Level Network Modules

Typically Ethernet is used to link shop-floor systems to higher level IT systems for SCADA (Supervisory Control And Data Acquisition) monitoring, maintenance, and similar functions. The Q Series Ethernet modules provide a method of linking automation systems to existing standard LAN infrastructures throughout a plant.

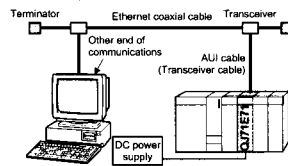
Key Features:

- GX-Developer provides complete support for configuration and maintenance of Ethernet links (no need for accessory plug-in modules)
- Programming, monitoring, email & FTP capabilities for remote system monitoring & maintenance via Ethernet connection
- Compatible with existing LANs via range of physical connection formats (10base-T, 100base-TX, 10base-5, 10base-2)
- Peer-to-peer communication
- Multiple ports
- Acts as a gateway into lower level networks for access to individual stations on large networks
- "Keep Alive" function allows the status of external equipment to be monitored via TCP/IP

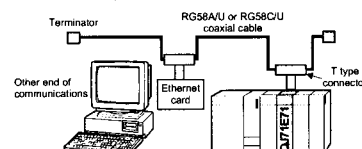


The following equipment is required for configuring an Ethernet system.

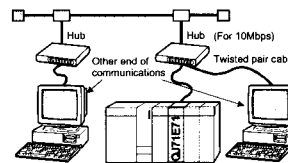
10BASE-5 : QJ71E71-B5



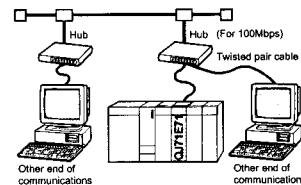
10BASE-2 : QJ71E71-B2



10BASE-T : QJ71E71-100



100BASE-TX : QJ71E71-100



Required Manuals

Model Number	Description	Contents	Included?	Stocked Item
IB(NA)0800009	Ethernet Interface Module User's Manual (Hardware) QJ71E71-100, QJ71E71, QJ71E71-B2	Basic information on QJ71E71-100, QJ71E71 & QJ71E71-B2	Yes	-
SH(NA)0800009	Q Corresponding Ethernet Interface Module User's Manual (Basic)	Covers programming and using the Ethernet modules	No (purchase separately)	-
SH(NA)0800010	Q Corresponding Ethernet Interface Module User's Manual (Application)	Covers higher level functions, such as email, FTP, and integration with other networks	No (purchase separately)	-
SH(NA)0800008	Q Corresponding MELSEC Communication Protocol Reference Manual	Reference guide to the MC Protocol used by the Q Series Ethernet modules (Also used by the QJ71C24 & QJ71C24-R2)	No (purchase separately)	-
SH(NA)080180	Manual (Web Function) Q Corresponding Ethernet Interface Module User's	Guide to using the Ethernet modules with an Internet connection	No (purchase separately)	-

Note: Many of these manuals are available by free download from our website, www.meau.com

Ethernet Enterprise Level Network Modules

Model Number			QJ71E71-100		QJ71E71-B5	QJ71E71-B2
			100BASE-TX	10BASE-T	10BASE5	10BASE2
Stocked Item			S		—	—
Certification			UL • cUL • CE		UL • cUL • CE	UL • cUL • CE
Transmission Specifications	Data Transmission Speed		100Mbps	10Mbps		
	Communication Mode		Full-duplex/Half-duplex	Half-duplex		
	Transmission Method		Base band			
	Maximum Node-to-Node Distance		—		2500 m (8202.10 ft.)	925 m (3034.77 ft.)
	Maximum Segment Length		100 m (328.08 ft.) (*1)		500 m (1640.42 ft.)	185 m (606.96 ft.)
	Maximum Number of Modes/Connection		Cascade connection Maximum 2 stages	Cascade connection Maximum 4 stages	100 units/ segment	30 units/ segment
	Interval Between the Minimum Nodes		—		2.5 m (8.20 ft.)	0.5 m (1.64 ft.)
Transmission Data Storage Memory	No. of Simultaneously Open Connections Allowed		16 connections (Connections usable by the sequence program)			
	Fixed Buffer		1 k words x 16			
	Random Access Buffer		6 k words x 1			
	E-mail	Attached File	6 k words x 1			
		Main Text	960 words x 1			
Number of Occupied I/O Points			32 points/1 slot (I/O assignments: intelligent)			
5VDC Internal Current Consumption			0.50A		0.50A	0.60A (*3)
12VDC External Power Supply Capacity (Transceiver)			—		(*2)	—
External Dimensions (H x W x D) mm (in)			98 x 27.4 x 90 (3.86 x 1.08 x 3.54)			
Weight kg (lb)			0.11 (0.24)		0.12 (0.26)	0.13 (0.29) (*3)

Notes:

- Length between the Hub and node.
- It is necessary to apply a transceiver, or a device that meets AUJ cable specifications.
- The product with first 5 digits of serial number "05049" or earlier is different as follows:
 - 5VDC internal current consumption: 0.70A
 - Weight: 0.14kg (0.31lb.)

Email Specifications

Data Size	Attached File	6k words x 1
	Main Text	960 words x 1
Data Transfer Method		When Sending : Either an attached file or text is sent. (Selectable) When Receiving: Attached file is received.
Subject		US-ASCII format or ISO-2022-JP (Base 64)
Attached File Format		MIME format
MIME		Version 1.0
Data Format of Attached File		Binary, ASCII or CSV can be selected. File name: XXXX.bin (binary), XXXX.asc (ASCII), XXXX.csv (CSV) (CSV: Comma Separated Value)
Division of Attached File		Cannot be divided (only one file can be sent/received) *When divided files are received, the first file portion is received and the others are discarded.
Send (Encode)		Subject: Base 64/7bits • Main Text: 7 bits Attached file: Base 64
Receive (Decode)		Subject : (Not decoded) Text : (Unreceivable) Attached file encoding: Base 64/7 bits/8 bits/Quoted Printable
Encryption		No
Compression		No
Communications with the Mail Server		SMTP (sending server) port number = 25 POP3 (receiving server) port number = 110

MELSEC Q Series / iQ CC-Link IE Control Level Master/Local Network Modules

CC-Link IE is an industry leading alternative for open control level networking. Originally introduced as MELSECNET/G, it introduces an unprecedented 1Gbit/s Ethernet physical layer fiber topology for system performance surpassing any other network technology. MELSECNET/G has been turned over to the open administration of the CC-Link Partner Association (CLPA), and is now known as CC-Link IE. Mitsubishi offers full support for CC-Link IE via the Q Series Automation Platform and the iQ Platform system.

Key features:

- Practically unlimited bandwidth (1Gbit/s)
- Noise immune, fault tolerant dual loop optical fiber media
- Uses industry standard 1000base-SX optical fiber and LC type connectors

- Variety of Reliability, Availability & Serviceability (RAS) functions to allow network operation to continue despite broken media, power failures, etc
- Extensive diagnostic functions and tools to monitor network operation and quickly troubleshoot faults
- Up to 120 stations per network
- Up 550 meters between stations
- Connect up to 239 networks
- Program free parameter based configuration for cyclic communications



CC-Link IE

Required Manuals

Model Number	Description	Contents	Included?	Stocked Item
IB(NA)0800364E	CC-Link IE Network Module User's Manual (Hardware)	Basic information on QJ71GP21-SX & QJ71GP21S-SX	Yes	–
SH(NA)080668ENG	CC-Link IE Network System Reference Manual (Controller Network)	Reference guide to the CC-Link IE network technology	No (purchase separately)	–

Note: Many of these manuals are available by free download from our website, www.meau.com.

CC-Link IE Optical Fiber Cordsets

Model Number	Description	Stocked Item
QG-□M-B-LL	CC-Link IE cordset, where □ represents length 1, 2, 3, 5, 10, 15, 20, 25, 30, 35, 40 or 50 meters	S

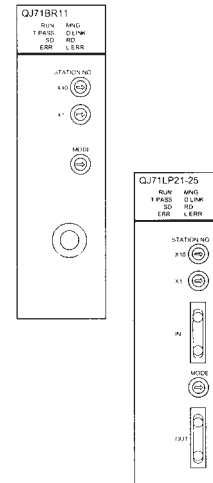
Model Number		QJ71GP21-SX	QJ71GP21S-SX
Stocked Item		S	–
Certification		UL • cUL • CE	
Max. Link Points Per Network	LB	32K points (32768 points, 4KB)	
	LW	128K points (131072 points, 256KB)	
	LX	8K points (8192 points, 1KB)	
	LY	8K points (8192 points, 1KB)	
Max. Link Points Per Station	LB	16K points (16384 points, 2KB)	
	LW	16K points (16384 points, 32KB)	
	LX	8K points (8192 points, 1KB)	
	LY	8K points (8192 points, 1KB)	
Transient Transmission Capacity		Up to 1920 bytes	
Communication Speed		1Gbps	
Number Of Stations Per Network		When Universal model QCPU is used for control station: 120; (Control station: 1, Normal station: 119) When High Performance model QCPU is used for control station: 64 (Control station: 1, Normal station: 63)	
Connection Cable		Optical fiber cable (Multi-mode fiber)	
Overall Cable Distance		66000m (When 120 stations are connected)	
Station-To-Station Distance (Max.)		550m (Core/Clad = 50/125 (μm))	
Max. Number Of Networks		239	
Max. Number Of Groups		32	
Number Of Occupied I/O Points		32 (Intelli.: 32 points)	48 (I/O assignment: Empty first half: 16 points, Latter half: 32 points for intelli.)
External Power Supply	Voltage	No external power supply function	20.4V to 31.2VDC
	Current		0.28A
	Terminal Screw Size		M3
	Applicable Solderless Terminal		R1.25-3
	Applicable Wire Size		0.3 to 1.25mm ²
	Tightening Torque		0.42 to 0.58N•m
	Allowable Momentary Power Failure Time		1ms (Level PS1)
	Noise Immunity		By noise simulator of 500Vp-p noise voltage, 1μs noise width, and 25 to 60Hz noise frequency
Internal Current Consumption (5VDC)		0.85A	0.90A
Dimensions (H x W x D) mm		98 x 27.4 x 90	98 x 55.2 x 90
Weight (kg)		0.18	0.28

MELSEC Q Series / iQ MELSECNET/H Control Level Master/Local Network Modules

Use MELSECNET/H to link Q Series systems together on a control level network for the coordinated operation of multiple controllers on a production line or large machine. MELSECNET/H also supports the direct connection of PCs onto the network for SCADA or maintenance applications. MELSECNET/H was designed to offer similar performance benefits to most industrial Ethernet systems, while offering the high degree of performance required in an automation environment.

Key Features:

- MELSECNET/H configuration and maintenance is supported by GX Developer with no need for accessory plug-ins
- High-speed communications at up to 25Mbit/s (depending on modules used)
- Backwards compatible with existing MELSECNET/10 installations.
- Guaranteed determinism via token passing scheme
- Scalable to exceed the needs of the largest installations (over 15,000 stations in one system)
- Up to 30km loop circumference via fiber connections
- Loop topology optical fiber media offers maximum speed and dual redundancy
- Single bus coax offers many performance benefits with economical media
- No programming required to establish cyclic network communications; just set parameters in GX-Developer
- Transient communications permit asynchronous peer to peer messaging
- Loop topology offers recovery from media breaks via automatic loop back
- Floating master maintains network operation by allowing any station to take over after the original master goes offline
- Offline stations return to the network automatically when able to
- Extensive diagnostic functions to monitor network operation and status
- Program & monitor across the network
- Transmit up to 35 kbytes of uninterrupted data for increased performance and simpler programming (S/N 06092x, Version D units or later)



Required Manuals

Model Number	Description	Contents	Included?	Stocked Item
IB(NA)0800144	MELSECNET/H Network Module User's Manual (Hardware) QJ71LP21-25, QJ71LP21G, QJ71BR11	Basic information on QJ71LP21-25, QJ71LP21G & QJ71BR11 (MELSECNET/H master modules)	Yes	—
SH(NA)080049	MELSECNET/10H for Q Network System Reference Manual (PLC to PLC network)	General reference to MELSECNET/H (MELSECNET/H & MELSECNET/10H are equivalent terms)	No (purchase separately)	—

Note: Many of these manuals are available by free download from our website, www.mead.com

MELSECNET/H Optical Fiber

Optical fiber media cable is available for connecting MELSECNET/H networks.

Model Number	Description	Stocked Item
AS-1000M-B	Optical fiber cable, sold by the meter	S
DL-72ME	AS-1000M-B connector, MEAU offers the service to provide pre-terminated cables as required	S
PA7003	Splice connector for joining pre-terminated AS-1000M-B cable	—
CAK-0068ME	Optical termination tool kit for AS-1000M-B and DL-72ME for on-site termination work	—

MELSECNET/H Control Level Master/Local Network Modules

Model Number	QJ71LP21-25		QJ71LP21S-25		QJ71LP21G		QJ71LP21GE		QJ71BR11																		
Stocked Item	S		—		—		—		S																		
Certification	UL • cUL • CE		UL • cUL • CE		UL • cUL • CE		UL • cUL • CE		UL • cUL • CE																		
Connection Form	Duplex loop type								Simplex bus type																		
Max. Number of Link Points Per Network			MELSECNET/H mode			MELSECNET/10 mode																					
	LX/LY		8192 points (8k bits)			8192 points (8k bits)																					
	LB		16384 points (16k bits)			8192 points (8k bits)																					
	W		16384 points (16k words)			8192 points (8k words)																					
Max. Number of Link Points Per Station	[LW+LB+LY<=2000 bytes (cyclic communication)]+[LW+LB+LY<=2000 bytes (low-speed cyclic communication)]																										
Transient Transmission Capacity	Max. 1920 bytes/frame																										
Transmission Speed	10Mbps/25Mbps (depending on switch setting) (*1)				10Mbps		10Mbps		10Mbps																		
Communication System	Token passing																										
Synchronization	Flag synchronization (frame synchronization system)																										
Modulation System	Base band system																										
Transmission Code	NRZI (Non Return to Zero Inverted)																										
Cable Type	Optical (AS-1000M-B (SI, 200/250)) (*2)		Optical (AS-1000M-B (SI, 200/250)) (*2)		Optical (GI-50/125)		Optical (GI-62.5/125)		Coaxial 75Ω RG-59B/U RG-11A/U																		
Transmission Frame Format	HDLC conformance (frame format)																										
Error Control System	CRC (X ¹⁶ +X ¹⁵ +X ⁵ +1) and time-out retry																										
Max. Number of Networks	239																										
Max. Number of Groups	32																										
Number of Stations Connected	64 stations (1: control station, 63: normal station)								32 stations (1: control station, 31: normal station)																		
Overall Distance	30km (98360.67 ft.)								500m (1639.34 ft.) RG-11A/U) / 300m (983.61 ft.) (RG-59B/U)																		
Station to Station Distance	<table><tr><td rowspan="2">Cable Type</td><td colspan="2">Transmission Speed</td></tr><tr><td>10Mbps</td><td>25Mbps</td></tr><tr><td>SI</td><td>500m (3278.69 ft.)</td><td>200m (1312.33 ft.)</td></tr><tr><td>H-PCF</td><td>1km (3278.69 ft.)</td><td>400m (1312.33 ft.)</td></tr><tr><td>Broadband H-PCF</td><td>1km (3278.69 ft.)</td><td>1km (3278.69 ft.)</td></tr><tr><td>QSI</td><td>1km(3278.69 ft.)</td><td>1km(3278.69 ft.)</td></tr></table>				Cable Type	Transmission Speed		10Mbps	25Mbps	SI	500m (3278.69 ft.)	200m (1312.33 ft.)	H-PCF	1km (3278.69 ft.)	400m (1312.33 ft.)	Broadband H-PCF	1km (3278.69 ft.)	1km (3278.69 ft.)	QSI	1km(3278.69 ft.)	1km(3278.69 ft.)	2km (6557.38 ft.)				500m (1639.34 ft.) (RG-11A/U) / 300m (983.61 ft.) (RG-59B/U)	
Cable Type	Transmission Speed																										
	10Mbps	25Mbps																									
SI	500m (3278.69 ft.)	200m (1312.33 ft.)																									
H-PCF	1km (3278.69 ft.)	400m (1312.33 ft.)																									
Broadband H-PCF	1km (3278.69 ft.)	1km (3278.69 ft.)																									
QSI	1km(3278.69 ft.)	1km(3278.69 ft.)																									
Distance Extension Repeater	—								Up to 2.5km (8196.72 ft.) by connection of max. four repeaters. Use A6BR10/ A6BR10-DC repeaters.																		
Number of I/O Points Occupied (*3)	32 points (I/O assignment, 32 intelligent points)		48 points (I/O assignment: first 16 points as empty, 1st 32 points as intelligent)		32 points (I/O assignment, 32 intelligent points)																						
External Power Supply	Voltage	—		20.4 to 31.2 VDC		—		—		—																	
	Current	—		0.20 A		—		—		—																	
	Terminal Screw Size	—		M3 Screw		—		—		—																	
	Applicable Solderless Terminal	—		R1.25-3		—		—		—																	
	Applicable Wire Size	—		0.3 to 1.25 mm²		—		—		—																	
	Tightening Torque	—		42 to 58N • cm		—		—		—																	
Internal Current Consumption (5VDC) (A)	0.55		0.55		0.55		0.55		0.75																		
Weight (kg)	0.11		0.20		0.11		0.11		0.11																		
Dimensions (W x H x D) mm (in)	27.4 x 98 x 90 (1.08 x 3.86 x 3.54)																										

Notes:

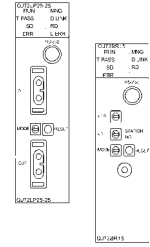
- 25 Mbps is available for the MELSECNET/H mode only.
- Other types of fiber can be used. See "Station to station distance."
- QJ71LP21S-25 occupies two slots on a Q Series base or extension unit.

MELSEC Q Series / iQ MELSECNET/H Remote I/O Network Modules

These modules form a complimentary solution to the master/local modules. The master/local modules allow CPUs to be linked for information exchange. The remote I/O modules fit on a base rack in place of the CPU, and allow this rack of I/O to be operated under the control of a remote Q Series CPU over a MELSECNET/H link.

Key Features:

- Fiber loop & coax bus versions available
- Place complex I/O combinations on a remote network link
- Most I/O & special function modules (analog, motion, communications, etc) can be installed on a remote I/O rack
- Remote I/O modules offer a communication port on the I/O rack when local access is required



Required Manuals

Model Number	Description	Contents	Included?	Stocked Item
IB(NA)0800145	MELSECNET/H Network Module User's Manual (Hardware) QJ72LP25-25, QJ72LP25G	Basic information on QJ72LP25-25, QJ72LP25G, QJ72BR15, QJ72BR15 (MELSECNET/H remote I/O station modules)	Yes	—
SH(NA)080124	Q Corresponding MELSECNET/H Network System Reference Manual (Remote I/O network)	General reference to MELSECNET/H remote I/O network	No (purchase separately)	—

Note: Many of these manuals are available by free download from our website, www.meau.com

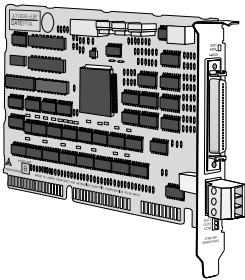
Q Series / iQ MELSECNET/H Remote I/O Network Modules

Mode Number		QJ72LP25-25	QJ72LP25G	QJ72LP25GE	QJ72BR15
Stocked Item		S	—	—	S
Certification		UL • cUL • CE	UL • cUL • CE	UL • cUL • CE	UL • cUL • CE
Connection Form		Duplex loop type			Simplex bus type
Max. Number of Link Points Per Network	LX/LY	8192 points (8k bits)			
	LB	MELSECNET/H mode: 16384 points (16k bits)			
	LW	MELSECNET/H mode: 16384 points (16k words)			
Max. Number of Link Points Per Station		Remote I/O station to remote master station ((LY+LB)/8 + (2 LW)) ≤ 1600 bytes			
Transient Transmission Capacity		Max. 1920 bytes/frame			
Transmission Speed		10Mbps/25Mbps (depending on switch setting)	10Mbps		
Communication System		Token passing system			
Synchronous System		Flag synchronization (frame synchronization system)			
Modulation System		Base band system			
Coding Method		NRZI (Non Return to Zero Inverted)			Manchester
Cable Type		Optical (AS-1000M-B (SI, 200/250) (*1))	Optical (GI-50/125)	Optical (GI-62.5/125)	Coaxial 75Ω (RG-59B/U, RG-11A/U)
Transmission Frame Format		HDLC-compliant (frame format)			
Error Control System		CRC (X ¹⁶ +X ² +1) and time-out retry			
Max. Number of Networks		239			
Number of Stations		65 stations (1: remote master station, 1: remote I/O station)			33 stations (1: remote master station, 32: remote I/O station)
Overall Distance		30km (98360.66 ft.)			500m (1639.34 ft.) (RG-11A/U) 300m (983.61 ft.) RG-59B/U
Distance Extension Repeater		—	—	—	Up to 2.5km (8196.72 ft.) 4 repeaters max. Use A6BR10/A6BR10-DC
Interstation Distance	Communication Speed: 10Mbps	SI type optical cable: 500m (3278.69 ft.), H-PCF type optical cable: 1km (3278.69 ft.), Broad-band H-PCF cable: 1km (3278.69ft.), QSI type optical cable: 1km (3278.69 ft.)	2km (6557.38 ft.)	2km (6557.38 ft.)	—
	Communication Speed: 25Mbps	SI type optical cable: 200m (1312.33 ft.), H-PCF type optical cable: 400m (1311.48 ft.), Broad-band H-PCF cable: 1km (3278.69 ft.), QSI type optical cable: 1km (3278.69 ft.)	—	—	—
Number of Occupied I/O Points		—	—	—	—
5VDC Internal Current Consumption (A)		0.89	0.89	0.89	1.1
Weight (kg)		0.15	0.15	0.15	0.16
Dimensions (W x H x D) mm (in)		27.4 x 98 x 90 (1.08 x 3.86 x 3.54)			

Note: 1. Other types of fiber can be used. See "Interstation distance".

PC Network Cards

Many of our larger scale controller systems are typically integrated into large-scale plant wide networks that require integration with PC based systems. Mitsubishi Electric addresses this requirement with a range of PC compatible network cards that allow a PC to be directly connected to a number of our networks. These boards are typically used as the physical network interface for a PC system written in third party applications such as Microsoft® Visual Basic™, Visual C++™, etc.



Model Number	Q80BD-J71GP21-SX	Q80BD-J71GP21S-SX	Q80BD-J71LP21-25	Q80BD-J71LP21S-25	Q80BD-J71LP21G	Q80BD-J71LP21GE	Q80BD-J71BR11	Q80BD-J61BT11N
Stocked Item	–	–	S	–	–	–	S	–
Certification	UL • cUL • CE	UL • cUL • CE	UL • cUL • CE	UL • cUL • CE	CE	CE	UL • cUL • CE	UL • cUL • CE
Network Type	CC-Link IE	CC-Link IE	MELSECNET/H	MELSECNET/H	MELSECNET/H	MELSECNET/H	MELSECNET/H	CC-Link
Media Type	Optical Fiber (62.5 micron)	Optical Fiber (62.5 micron)	Optical Fiber (200 micron)	Optical Fiber (200 micron)	Optical Fiber (50 micron)	Optical Fiber (62.5 micron)	Coax	Twisted Pair
Configuration Type	Dual loop	Dual loop	Dual loop	Dual loop	Dual loop	Dual loop	Bus	Bus
Station Type	Master/local	Master/local	Master/local	Master/local	Master/local	Master/local	Master/local	Master/local
External Power Supply	No	Yes	No	Yes	No	No	No	No

QJE1BT11N

RUN L RUN
MET S MET
SD RD
ERR L ERR

STATION NO.

X10

X1

MODE

NC

DA

SLD

CB

CG

2

2

5

6

7

- QJ61BT11N module supports CC-Link V2.0
- V2.0 increases I/O capacity to 8192 points and data capacity to 4096 words (up from 2048 and 512 respectively)
- V2.0 permits more efficient use of network station address space
- CC-Link configuration and maintenance is supported by GX Developer with no need for accessory plug-ins
- Control up to 64 CC-Link networks from a single Q Series system
- Open device network with over 200 vendors
- Eliminates costly wiring harnesses with a single economical cable
- Adds device diagnostic capabilities
- All devices on the network support high performance 10Mbit/s communications speed
- Up to 13.2km bus length with repeaters
- Redundant master station capability
- Fully supported by all Mitsubishi automation products
- Very wide array of products available

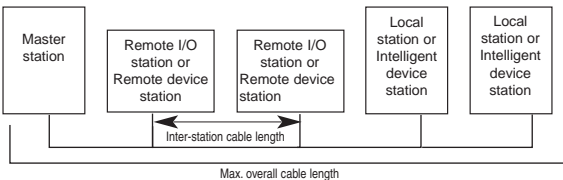
Required Manuals

Model Number	Description	Contents	Included?	Stocked Item
IB(NA)0800250	CC-Link System Master/Local Module User's Manual (Hardware) QJ61BT11N	Covers basic information on QJ61BT11N	Yes	—
SH(NA)080394	CC-Link System Master/Local Module User's Manual QJ61BT11N	Covers programming a CC-Link system	No (purchase separately)	—

Note: Many of these manuals are available by free download from our website. www.meau.com

Model Number	QJ61BT11N
Stocked Item	S
Certification	UL • cUL • CE
Transmission Rate	Can select from 156 kbps/ 625 kbps/ 2.5 Mbps/ 5 Mbps/ 10 Mbps
Maximum Overall Cable Distance (Maximum Transmission Distance)	Varies according to the transmission rate (156 kbps: 1200m; 10Mbps: 100m)
Maximum Number of Connected Stations (Master Station)	64
Number of Occupied Stations (Local Station)	1 to 4 stations; The number of stations can be switched using the GX Developer parameter setting.
Maximum Number of Link Points Per System	Remote I/O (RX, RY): 8192 points; Remote register (RWw): 2048 words (Master station — remote device station/local station/ intelligent device station/standby master station; Remote register (RWR): 2048 words (Remote device station/local station/ intelligent device station/standby master station—master station
Remote Station/Local Station/Intelligent Device Station/Standby Master Station Maximum Number of Link Points Per Station	Remote I/O (RX, RY): 128 points; Remote register (RWw): 32 words (master station — remote device station/ local station/intelligent device station/standby master station); Remote register (RWR): 32 words (remote device station/local station/ intelligent device station/standby master station—master station)
Communication Method	Polling method
Synchronization Method	Flag synchronous method
Encoding Method	NRZI method
Transmission Path	Bus (RS-485)
Transmission Format	Conforms to HDLC
Error Control System	CRC ($X^{16} + X^{12} + X^5 + 1$)
Connection Cable	CC-Link cable BA1SJ61-S or BA1SJ61-P. Use terminating resistors.
RAS Function	Automatic return function; Slave station cut-off function; Error detection by the link special relay/register
Number of I/O Occupied Points	32 points (I/O assignment: Intelligent 32 points)
5VDC Internal Current Consumption	0.46 A

CC-Link Device Level Master/Local Network Module (continued)

Model Number		QJ61BT11N	
Max. Overall Cable Length and Inter-Station Cable Length (Ver. 1.10 or later)	Same Specifications Regardless of System Configuration		
		Ver. 1.10-compatible CC-Link dedicated cable (terminating resistor 110Ω used)	
		Transmission speed	Inter-station cable length
		156kbps	20 cm (7.88 inch) or more
		625kbps	
		2.5Mbps	
5Mbps			
10Mbps			
Connection Cable		BA1SJ61-S (signal only) / BA1SJ61-P (signal and power)	
Number of Occupied I/O Points		32 points (I/O assignment: 32 intelligent points)	
Internal Current Consumption (5VDC) (A)		0.46	
Dimensions (W x H x D) mm (in)		27.4 (1.08) x 98 (3.86) x 90 (3.54)	
Weight (kg)		0.12	

Required Manuals for Profibus-DP

Model Number	Description	Contents	Included?	Stocked Item
IB(NA)0800150	QJ71PB92D User's Manual (Hardware)	Covers basic information on QJ71PB92D	Yes	—
SH(NA)080127	Profibus-DP Interface Module User's Manual	Covers programming a Profibus-DP network	Included as PDF with GX Configurator-DP	—
IB(NA)65778	GX Configurator-DP 4.0 configuration system for open networks software manual	Covers the use of GX-Configurator-DP	Included as PDF with GX Configurator-DP	—

MELSEC Q Series Profibus-DP Device Level Network Master Module

The Profibus-DP master module allows the Q Series to control systems that require integration of third party Profibus-DP products. The QJ71PB92D module is configured by use of the GX Configurator-DP plug-in for GX-Developer.

Model Number	QJ71PB92D	
Stocked Item	S	
Certification	UL • cUL • CE	
Compatible Network	Profibus-DP	
Function	Master	
Transmission Speed & Distance	9.6k/19.2k/93.75k bps	1,200m (3,937 ft.)
	187.5k bps	1000m (3,280 ft.)
	500k bps	400m (1,312 ft.)
	1.5M bps	200m (656 ft.)
	3M/6M/12M bps	100m (328 ft.)
No. of Nodes	32,62 with 1 repeater, 92 with 2 repeaters, 122 with 3 repeaters	
No. of Repeaters	3 repeaters max. per network	
Max. No. of Slave Nodes	60	
Transmission Data Size	Max. 32 bytes/station (normal service mode) Max. 244 bytes/station (extended service mode)	
Current Consumption (5VDC) (A)	0.57	
Weight (kg)	0.15	
Dimensions (W x H x D) mm (in)	27.4 x 98 x 90 (1.08 x 3.86 x 3.54)	

MELSEC Q Series / iQ DeviceNet™ Device Level Network Master Module

The DeviceNet master module allows the Q Series to control systems that require integration of third party DeviceNet products. The QJ71DN91 module is configured by use of the GX Configurator-DN plug-in for GX-Developer. Note that this module is also capable of functioning as a DeviceNet slave if required.

Model Number				QJ71DN91						
Stocked Item				S						
Certification				UL • cUL • CE						
Node Type				DeviceNet master (Group 2 only client)						
Node Number Which Can be Set				0 to 63						
Functioning as Master	Number of Connections That Can Be Created	Message Connection		63						
		I/O Connection		63 (polling, bit strobe, change of state, cyclic)						
	Amount of Communication Data	I/O Communication	Send	Max. 4096 points (512 bytes), max 256 bytes per 1 node						
			Receive	Max. 4096 points (512 bytes), max 256 bytes per 1 node						
		Message Communication	Send	Max. 240 bytes						
			Receive	Max. 240 bytes						
Functioning as Slave	Node Type		DeviceNet slaves (Group 2 server)							
	Setting Possible Node Number		0 to 63							
	Number of Connections that be Created	I/O Connection		1 (polling)						
	Amount of Communication Data	I/O Communication	Send	Max. 1024 points (128 bytes)						
		Receive	Max. 1024 points (128 bytes)							
Transmission Speed				One speed can be selected from 125, 250 and 500 kbit/s						
Maximum Cable Length*				Communications speed	Maximum transmitting distance of trunk line			Length of drop line		
					Thick cables	Thin cables	Thick and thin cables coexist	Maximum	Total	
					125 kbaud	500m (1640 ft.)	100m (328 ft.)	See the table below	6m (20 ft.)	156m (511 ft.)
					250 kbaud	250m (820 ft.)				78m (256 ft.)
					500 kbaud	100m (328 ft.)				39m (128 ft.)
Current Consumption Required on the Network (A)				0.03						
Number of Times to Write Flash ROM				Max. 100000 times						
Number of I/O Occupied Points				32 points (I/O allocation: Intelligent 32 points)						
5VDC Internal Current Consumption (A)				0.17						
Weight (kg)				0.11						
Dimensions (W x H x D) mm (in)				27.4 x 98 x 90 (1.08 x 3.86 x 3.54)						

* The maximum cable length complies with that in the DeviceNet specification (release 2.0) volumes 1 & 2.

Combined Distance of Thick and Thin Cables

Transmission Speed	Max. Combined Distance of Thick and Thin Cables
125 kbaud	Thick cable length + 5 x Thin cable length ≤ 500m (1640 ft.)
250 kbaud	Thick cable length + 2.5 x Thin cable length ≤ 250m (820 ft.)
500 kbaud	Thick cable length + Thin cable length ≤ 100m (328 ft.)

Required Manuals for DeviceNet

Model Number	Description	Contents	Included?	Stocked Item
IB(NA)0800149	QJ71DN91 User's Manual (Hardware)	Covers basic information on QJ71DN91	Yes	—
SH(NA)080143	DeviceNet Master-Slave Module User's Manual	Covers programming of the QJ71DN91 module and GX-Configurator-DN	Included as PDF with GX-Configurator-DP	—

Note: Many of these manuals are available by free download from our website, www.meau.com
 DeviceNet is a trademark of ControlNet International, Ltd. under license by Open DeviceNet Vendor Association, Inc.

Q Series / iQ PROFIBUS-DP V1 & V2 Device Level Network Master Module

The QJ71PB92V supports the more recent PROFIBUS-DPV1 and V2 advanced function set.

Key Features:

- PROFIBUS-DPV1 functions:
 - Acyclic slave communications
 - Slave alarm acquisition
- PROFIBUS-DPV2 functions:
 - Slave station clock control
- General functions:
 - Up to 125 slave stations
 - Support for slave configuration with CommDTM/FDT
 - Program using GX Configurator DP V7.0



PROFIBUS-DP Master Module Performance Specifications

Model Number		QJ71PB92V		
Stocked Item		S		
Certification		UL • cUL • CE		
PROFIBUS-DP Station Type		Class 1 master station		
Transmissions Specifications	External Standard & Characteristics	EIA-RS485 compatible		
	Communication Cable	Shielded twisted pair cable		
	Network Configuration	Bus type (tree type if repeater is used)		
	Data Link System	Master station <-> master station: Token passing system Master station <-> slave station: Polling system		
	Transmission Symbol Format	NRZ		
	Transmission Rate (*1) Maximum Transmission Distance (*2)	Transmission Rate	Transmission Distance	Max. Transmission Distance When Using Repeater (*2)
		9.6kbps	1200m/segment	4800m/network
		19.2kbps		
		93.75kbps		
		187.5kbps	1000m/segment	4000m/network
		500kbps	400m/segment	1600m/network
		1.5Mbps	200m/segment	800m/network
		3Mbps	100m/segment	400m/network
		6Mbps		
	12Mbps			
	Max. No. Of Repeaters In A Path	3 repeaters		
Max. No. Of Stations	32 stations per segment (including repeaters)			
Max. No. Slave Stations	125 slaves per single QJ71PB92V master			
I/O Data Size	Max. 8192 words (4096 input words, 4096 output words)			
Number Of Flash ROM Writings		Max. 100,000 times		
Number of Occupied I/O Points		32 points (1/0 assignment: intelligent 32 points)		
5VDC Internal Current Consumption		0.57A		
External Dimensions (H x W x D) mm		98 x 27.4 x 90		
Weight (kg)		0.13		

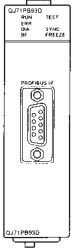
Notes:

1. Transmission rate control is within $\pm 0.2\%$ (compatible with IEC 61158-2).
2. The "maximum transmission distance" in the above table is an example which assumes that 3 repeaters are being used. If more repeaters are used to extend the distance, the maximum transmission distance would be calculated as follows: [Maximum transmission distance (m/network)] = [Number of repeaters + 1] x [transmission distance (m/segment)]

Required Manuals

Model Number	Description	Contents	Included?	Stocked Item
IB(NA)0800324	Profibus-DP Master Module User's Manual (Hardware)	Covers basic information on QJ71PB92V	Yes	—
SH(NA)080572ENG	Profibus-DP Master Module User's Manual	Covers using the QJ71PB92V	No	—

Note: Many of these manuals are available by free download from our website, www.meau.com



MELSEC Q Series / iQ PROFIBUS-DP Device Level Network Slave Module

The QJ71PB93D allows a Q Series system to be connected to a third party PROFIBUS-DP network as a slave controller. This allows distributed processing systems to be built where local control of the application can be given to the Q Series, which then supplies information back to a supervisory controller. This could be another Q Series system, fitted with the QJ71PB92D. Configure the QJ71PB93D using the GX Configurator-DP plug in for GX Developer.

Model Number		QJ71PB93D		
Stocked Item		-		
Certification		UL • cUL • CE		
PROFIBUS-DP Station Type		Slave station (EN50170 Volume 2 (Parts 1-4, 8) compliant)		
Station Number Setting Range		0 to 125 (*3)		
Max. Communication Data Size		Number of I/O data is 192 words in total (Number of input or output data is up to 122 words)		
Transmission Specifications	Electrical Standards	Complies with EIA-RS485		
	Network Cable	Dedicated PROFIBUS DP cable		
	Network Configuration	Bus (tree type when a repeater is used)		
	Data Link Method	Polling method		
	Transmission Encoding Method	NRZ		
	Transmission Speed / Maximum Transmission Distance (*1, *2)	Transmission Speed	Transmission Distance [m/segment]	Max. Transmission Distance with 3 repeaters [m]
		9.6 [kbps]	1200	4800
		19.2 [kbps]		
		45.45 [kbps]		
		93.75 [kbps]		
		187.5 [kbps]	1000	4000
		500 [kbps]	400	1600
		1500 [kbps]	200	800
		3 [Mbps]	100	400
		6 [Mbps]		
	12 [Mbps]			
Max. Number of Repeaters / Network	3 units (*2)			
Max. Number of Stations / Segment	32 stations (including repeaters)			
Number of Connection Nodes / Segments	32			
Terminating Resistor		Required		
Maximum Number of Flash ROM Writing		10,000 times		
Number of Occupied I/O		32 points (I/O assignment: 32 intelligent points)		
5VDC Internal Power Consumption		0.44		
Weight (kg)		0.11		
Dimensions (W x H x D) mm (in)		27.4 x 98 x 90 (1.08 x 3.86 x 3.54)		

Notes:

- Transmission speed control within $\pm 3\%$ (Compliant with EN50170 Volume 2)
- Distance that the transmission distance can be expanded by (m/network) using repeaters.
Maximum transmission distance (m/network) = (number of repeaters + 1) x transmission distance (m/segment)
- Factory set to "126" (EN50170 Volume 2 compliant)
Set the station number by using sequence program or GX Configurator-DP 4.03D or later.
Set communication parameters on the master station side.
GSD (DDB) file may be required without GX Configurator-DP Version 4.03D or later. Please contact your local Mitsubishi representative for the GSD (DDB file).

Required Manuals

Model Number	Description	Contents	Included?	Stocked Item
SH(NA)080318	Profibus-DP Slave Module type QJ71PB93D User's Manual	Covers QJ71PB93D and GX Configurator-DP	No	-
IB(NA)0800230	Profibus-DP Slave Module User's Manual (Hardware) QJ71PB93D	Basic information on QJ71PB93D	Yes	-

MELSEC Q Series / iQ MODBUS/TCP Network Module

The QJ71MT91 module offers a full MODBUS/TCP network communications facility to any Q Series system. Use this module to establish control of a MODBUS/TCP network of devices from a Q Series based system.

Key Features:

- Module set-up via menus in GX Developer; no programming required (requires use of GX Configurator-MB plug in)
- GX Configurator-MB reduces maintenance time with clear presentation of module status
- Master communication function supports both automatic communications or communication under program control if required
- Also supports slave communication functions including automatic response and MODBUS device assignment
- Both slave and master functions can operate concurrently
- GX Developer connection via Ethernet
- 100Mbit Ethernet capability with KeepAlive and router relay functions



Required Manuals

Model Number	Description	Contents	Included?	Stocked Item
IB(NA)0800280	MODBUS/TCP Interface Module User's Manual (Hardware) QJ71MT91	Basic information on QJ71MT91	Yes	–
SH(NA)080446ENG	MODBUS/TCP Interface Module User's Manual	Covers QJ71MT91 & GX Configurator MB	Included with GX Configurator MB as PDF	–

MELSEC Q Series / iQ MODBUS/TCP Network Module

Model Number			QJ71MT91	
			10BASE-T	100BASE-TX
Stocked Item			S	
Certification			UL • cUL • CE	
Transmission Specifications	Data Transmission Rate		10Mbps	100Mbps
	Transmission Method		Base band	
	Maximum Node-To-Node Distance		200m	
	Maximum Segment Length (*1)		100m	
	Number Of Cascade Connection Stages		Max. 4 stages	Max. 2 stages
	Maximum Number Of Connections (*2)		64 connections	
	Number Of Routers That Can Be Set		1 default router + any 8 routers	
	Cable		Cable compliant with the IEEE802.3 10BASE-T Standard (unshielded twisted pair cable (UTP cable), Category 3 4, 5)	Cable compliant with the IEEE802.3 100BASE-TX Standard (shielded twisted pair cable (STP cable), Category 5)
Connector Applicable For External Wiring			RJ45	
Master Function	Automatic Communication Function	Number Of Slaves (*3)	64 slaves	
		Function (For Send)	7 functions	
		Input Area Size	4k words	
		Output Area Size	4k words	
	Dedicated Instruction	Number Of Instructions That Can Be Executed Concurrently (*4)	Up to 8 instructions	
		Function (For Send)	MBRW instruction: 9 functions; MBREQ instruction: 19 functions	
		Input Area Size	Max. 253 bytes per instruction	
		Output Area Size	Max. 253 bytes per instruction	
Slave Function	Automatic Response Function	Function (For Receive)	12 functions	
	MODBUS Device Size	Coil	64k points	
		Input	64k points	
		Input Register	64k points	
		Holding Register	64k points	
		Extended File Register	Max. 4086k points	
No. of Simultaneously Acceptable Request Messages		64		
GX Developer Connection Function	Number Of Simultaneously Connectable GX Developers		Max. 8	
Number Of Occupied I/O Points			32 points	
5VDC Internal Current Consumption			0.52A	
External Dimensions (W x H x D) mm (in)			27.4 x 98 x 90 (1.08 x 3.86 x 3.54)	
Weight (kg)			0.11	

Notes:

1. Length between a hub and a node.
2. Indicates the number of TCP connections that can be established simultaneously.
3. Indicates the maximum number of slaves that can be communication targets.
4. Indicates the maximum number of dedicated instructions that can be started simultaneously from a sequence program.

MELSEC Q Series / iQ MODBUS® RTU Master Module

The QJ71MB91 module adds Modbus RTU capability to a Q Series system. Use this module to communicate with and control any of a wide variety of third party Modbus compatible products.

Key Features:

- Module set-up via menus in GX Developer; no programming required (requires use of GX Configurator-MB plug in)
- GX Configurator-MB reduces maintenance time with clear presentation of module status
- Supports master communication with automatic communication
- Dedicated instructions are available for communications
- Supports slave communications with automatic response and device assignment function
- Link operation function; allows a third party Modbus device to communicate with Modbus slaves connected to the Q Series controller via the QJ71MB91 module
- 115.2kbps communication speed



Required Manuals

Model Number	Description	Contents	Included?	Stocked Item
IB(NA)0800329	Modbus Interface Module User's Manual (Hardware)	Basic information on the QJ71MB91	Yes	—
SH(NA)080578ENG	Modbus Interface Module User's Manual	Covers QJ71MB91 and GX Configurator MB	No	—

Note: Many of these manuals are available by free download from our website, www.meau.com. Modbus is a registered trademark of Schneider Electric.

Model Number			QJ71MB91				
Stocked Item			S				
Certification			UL • cUL • CE				
Transmission Specifications	Number of Interfaces		RS-232 1 channel; RS-422/485 1 channel				
	Transmission Speed		Total transmission speed of two interfaces must be 115200 bps or less.				
			300		600	1200	2400
			4800		9600	14400	19200
			28800		38400	57600	115200
		(bps)					
	Transmission Distance (Overall Distance)	RS-232	Max. 15m (49.2 ft.)				
		RS-422/485	Max. 1200m (3936.9 ft.) (Overall distance)				
Master Function	Automatic Communication Function	Number of Slaves (*1)	32 per channel				
		Function (For Send)	7 functions				
		Input Area Size	4k words				
		Output Area Size	4k words				
	Dedicated Instruction	Number of Instructions That Can Be Executed Concurrently (*2)	1 per channel				
		Function (For Send)	MBRW instruction: 9 functions MBREQ instruction: 19 functions				
		Input Area Size	Max. 253 bytes per instruction				
		Output Area Size	Max. 253 bytes per instruction				
Slave Function	Automatic Response Function	Function (For Receive)	17 functions				
	MODBUS® Device Size	Coil	64k points				
		Input	64k points				
		Input Register	64k points				
		Holding Register	64k points				
		Extended File Register	Max. 4086k points				
	No. of Simultaneously Acceptable Request Messages		1 Request Per Channel				
Station No.		1 to 247					
Number of Occupied I/O Points			32 points				
5VDC Internal Current Consumption			0.31A				
External Dimensions (H x W x D) mm (inch)			98 x 27.4 x 90 (3.86 x 1.08 x 3.54)				
Weight (kg)			0.20				

Notes:

1. Indicates the maximum number of slaves that can be communication targets.
2. Indicates the maximum number of dedicated instructions that can be activated simultaneously from a sequence program.

Screw Location	Tightening Torque Range
Terminal Screw for RS-422/485 Terminal Block (M3 Screw)	0.42 to 0.58N•m
Mounting Screw for RS-422/485 Terminal Block (M3.5 Screw)	0.66 to 0.89N•m
Module Fixing Screw (Usually Not Required) (M3 Screw) (*1)	0.36 to 0.48N•m

Note:

1. The module can be easily fixed to the base unit with the hook on the top of the module. In the operating environment where high vibration and/or strong impact are observed, however, it is recommended to fix the module with the module fixing screws.

MELSEC Q Series CC-Link/LT Sensor Level Network Master Module

The QJ61CL12 allows the Q Series to control a CC-Link/LT network segment. Key features of CC-Link/LT are:

CC-Link/LT



- Connect network devices with no cutting or stripping of cable
- I/O is addressed like it was on the rack; no special programming required
- Control up to 1024 I/O per master
- Compatible with CC-Link
- Fine granularity of I/O allows placement of small groups of I/O where required
- Required manuals listed at bottom of page.

Model Number				QJ61CL12		
				4-Point Mode	8-Point Mode	16-Point Mode
Stocked Item				S		
Certification				UL • cUL • CE		
Control Specifications	Max. Number of Link Points [When The Same I/O Address Is Used]			256 points (512 points)	512 points (1024 points)	1024 points (2048 points)
	Number of Link Points Per Station [When The Same I/O Address Is Used]			4 points (8 points)	8 points (16 points)	16 points (32 points)
	Link Scan Time (ms)	When 32 Stations Are Connected	Number of Points	128 points	256 points	512 points
			2.5Mbps	0.7	0.8	1.0
			625kbps	2.2	2.7	3.8
			156kbps	8.0	10.0	14.1
		When 64 Stations Are Connected	Number of Points	256 points	512 points	1024 points
			2.5Mbps	1.2	1.5	2.0
			625kbps	4.3	5.4	7.4
			156kbps	15.6	20.0	27.8
Communication Specifications	Transmission Rate (bps)			2.5M / 625k / 156k		
	Communication Method			BITR (Broadcast polling + Interval Timed Response)		
	Communication Path			T-branch		
	Error Control Method			CRC		
	Number of Connected Units			64		
	Remote Station Numbers			1 to 64		
	Master Station Connection Position			Connected to the end of the main line		
	RAS Function			Network diagnostics, internal loopback diagnostics, station detach function automatic return to system		
Connection Cable			Dedicated flat cable (0.75mm ² x 4) CL9-FL4-18			
I/O Occupied Points (*1)				16, 32, 48, 64, 128, 256, 512, 1024 (I/O assignment: Intell.)		
5VDC Internal Current Consumption				0.13 A		
24VDC Power Supply (*2)	Voltage			20.4 to 28.8 VDC		
	Current Consumption			0.028 A		
	Current on Startup			0.070 A		
Weight (kg)				0.09		

Notes: 1. Set by module switches; 2. External supply

MELSEC Q Series AS-i Sensor Level Network Master Module

The AS-i module allows Q Series to control systems that require integration of third party AS-i sensor level network products. The GX Configurator-AS plug in for GX Developer configures the QJ71AS92 module.



Model Number		QJ71AS92
Stocked Item		S
Certification		CE
Max. Number of AS-i System Slaves		62 (Group A: 31, Group B: 31)
Max. Number of I/O Points (1 Point = 16 Bits)	Input	248 points
	Output	248 points
Max. Number of Analog I/O Points (1 Point = 1 Bit)	Input	124 points
	Output	124 points
I/O Refresh Time		Approx. 5 ms (without I/O slave grouping); Approx. 10 ms (with I/O slave grouping); Approx. 35 ms (per analog slave channel)
Communication Speed		167 kbps
Transmission Distance		Max. 100m (Max. 300m by use of two repeaters)
Connection Type		Bus network type (any of star, line, tree and ring enabled)
Communication Method		APM modulation method (Alternating Pulse Modulation)
Error Control Method		Parity check
Internal Memory		EEPROM (for parameter registration), number of writes: 100,000 times
Number of Occupied I/O Points		32 points (I/O assignment: 32 intelligent points)
Applicable Wire		Use AS-i cable
External Power Supply	Voltage	TYP. 30.5 VDC (supplied by AS-i power supply)
	Current Consumption	46mA (TYP 30.5 VDC)
5VDC Internal Current Consumption		0.40A
Weight (kg)		0.12
Dimensions (W x H x D) mm (in)		27.4 x 98 x 90 (1.08 x 3.86 x 3.54)

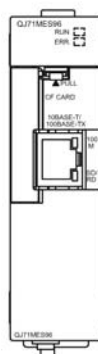
Required Manuals

Model Number	Description	Contents	Included?	Stk Item
IB(NA)0800232	QJ61CL12 CC-Link/LT Master Module User's Manual (Hardware)	Basic information on QJ61CL12	Yes	—
SH(NA)080351	CC-Link/LT Master Module User's Manual QJ61CL12	Covers QJ61CL12 and CC-Link/LT	No	—
SH(NA)080291	AS-i Master Module User's Manual	Covers QJ71AS92 and GX Configurator-AS	Supplied as a PDF with GX Configurator-AS	—
IB(NA)0800225	AS-i Master Module User's Manual (Hardware) QJ71AS92	Basic information on QJ71AS92	Yes	—

MELSEC Q Series Standard MES Interface Module

As part of Mitsubishi's e-F@ctory technology, the QJ71MES96 module allows a direct connection from a Q Series Automation Platform controller on the shop floor to high level IT MES (Manufacturing Execution Systems) infrastructure. This offers the following benefits:

- No need for intermediate PC infrastructure to interface shop floor controllers to "front office" IT systems
- Significantly reduced cost of ownership as no PC maintenance issues apply
- Improved security; prevents access by unauthorized personnel
- Improved productivity; industrially hardened architecture is immune to typical PC reliability issues
- High speed Ethernet connection from shop floor to "front office" IT systems
- Convenient installation; module simply mounts in a spare Q Series slot and configures with dedicated software tool (MX-MESIF-STD-C1)



Required Manuals for QJ71MES96

Model Number	Description	Contents	Included?	Stocked Item
IB(NA)0800354	QJ71MES96 MES Interface Module User's Manual (Hardware)	Basic information on QJ71MES96 module	Yes	—
SH(NA)080644ENG	QJ71MES96 MES Interface Module User's Manual	Complete information on how to use the MES interface module and associated software	No (purchase separately)	—

Performance Specifications

Model Number		QJ71MES96	
Stocked Item		S	
Certification		UL • cUL • CE	
Ethernet	Interface (*1)	10BASE-T	100BASE-TX
	Data Transmission Rate	10 Mbps	100 Mbps
	Transmission Method	Base band	
	Number of Cascaded Stages	Maximum 4 stages	Maximum 2 stages
	Max. Segment Length (*2)	100 m	
	Supported Function	The auto-negotiation function is available. (automatically distinguishes 10BASE-T from 100BASE-TX)	
Compact Flash Card	Supply Power Voltage	3.3V ±5%	
	Supply Power Capacity	Maximum 150 mA	
	Card Size	TYPE I card	
	Number of Mountable Modules	1	
Number of Occupied I/O Points		32 points/slot (I/O assignment: Intelli. 32 points)	
Clock		The clock data is obtained from a PLC CPU (in multiple CPU system, CPU No.1) or the SNTP server computer	
5VDC Internal Current Consumption		0.65A	
External Dimensions H x W x D mm (in)		98 x 27.4 x 90 (3.86 x 1.08 x 3.54)	
Weight (kg)		0.16	

Notes:

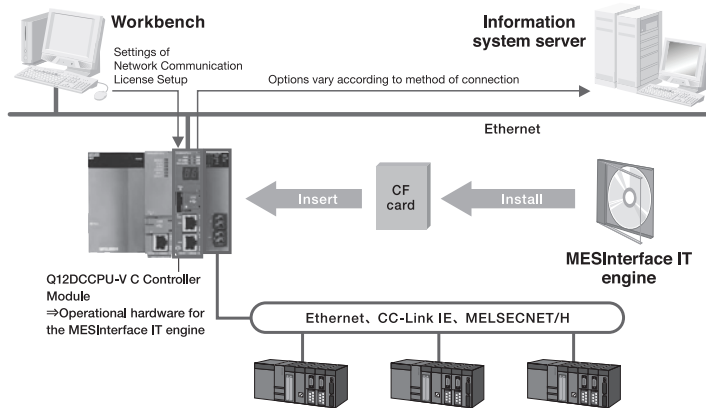
1. The MES interface module distinguishes 10BASE-T from 100BASE-TX depending on the device on other end. For connection with a hub not having the auto-negotiation function, set the hub side to half-duplex auto communication mode.
2. Distance between a hub and node.

Q Series MES Interface IT Module

The MES Interface IT and e-F@ctory technology solves the difficult challenge of efficiently linking factory and IT systems to enable comprehensive data collection and distribution. It achieves system standardization security, and high data reliability for any system from individual machines to large scale production lines.

- Access to accurate and reliable production information
- Dramatically simplified system architecture

- Reduced integration time and effort
- Improved security and standardization
- Achieves lean and agile operation at the lowest cost of ownership



MES Interface

Product Interface	Model Number	Stocked Item	Installation Location	Description
MES Interface IT	QJ71MES96IT	S	Includes Appliance, Compact Flash Card and Core Software	MES IT platform with 5 device connections

Functions

Tag Enumeration Function		Collects tag information such as PLC device data PLC devices (including aliases) Local variable (internal variable effective only during trigger-based execution) Static variable (variable that retains data even after trigger-based execution) Macro (system-defined values) Constant
Transport Setting Function (Method Of Communication with the Host Information System)		Sets the method of communication with the host information system
	Database	Allows direct access with the database by external interface (JMS type)
	Message	Allows message transmission to and message receipt from the host information system
Database Interface Function		Accesses the database in the host information system
	SQL Message Generation	Automatically generates SQL messages and communicates with the database. The following SQL messages can be generated: Select; Batch insert (inserts multiple lines collectively); Update; Select; Delete; Select with delete (deletes a selected line); Select with update (Performs select and update as a single task); Stored Procedure; Count rows (selects the relevant number of rows)
Message Communication Function		Sends and receives messages to and from the information system
	Message Sending	Construct and send messages to the information system
	Message Receiving	Receive and process messages from the information system
Trigger Monitoring Function		Monitors time and tag information, activates the database interface, and message communication functions in accordance with trigger conditions
Arithmetic Processing Function		Arithmetically processes the data that is to be sent/received using the database interface and message communications functions
Buffering Function		Buffers data that is received from or is to be sent to the information system
	Local Database	Creates a local database in the module
	Communication Data Recovery (Store & Forward)	In the event of a communication error with the information system, data is temporarily stored to a CompactFlash card in the module, (time-stamped with the trigger time) and re-forwarded to the system after recovery
Security Function		Role-based security infrastructure that controls information and function access among users. Provides audit operation logging
Time Synchronization Function		Synchronized the time of the interface module and the time of the network SNTP server

Performance Specifications

Data Transport Method	Databases	Oracle 10g, 11g; Microsoft SQL Server 2000, 2005; IBM DB2 8.9; IBM DB2/400 V5R3; Local DB
	Messages	WebSphere MQ; JMS; SMTP (e-mail); TCP; HTTP
Data Transport Map	SQL Commands Supported by the Database Interface Function	Insert; Batch Insert; Update; Select; Delete; Select with Delete; Select with Update; Stored Procedure; CountRows
	Message Style	ASCII (delimited format, free format), XML
	Character Code	UTF-8
	Max. Store and Forward Capacity	10,000MB/transport However, the volume actually used does not exceed the capacity of a CompactFlash card (512MB)
Trigger	Trigger Conditions	Fixed cycle (Schedule-Periodic); Fixed time (schedule); Value monitoring (Data); Listner (Listner); Manual operation (On Demand); Boot from separate trigger (Sub Trigger); MES Interface IT event (Internal); Top management communication event (Enterprise); Event from separate system with multiple CPUs (GINT command)
	Actions	Numerical processing (referencing other numerical operations) (Expression); Standby (Wait); Device writing (Set); Array operation (Array); Bit operation (Bit); Device control (Device); Communication from top management (Enterprise Communication); Setting display (Hardware); Correction of internal data (internal); PING operation (Ping); Job control (Routing); File operation (Staging File System); Character string operation (String); Boot trigger (Trigger)
	Operations	Four arithmetic operation (+, -, x, /); abs (absolute value); acos (inverse cosine); asin (inverse sine); atan (inverse tangent); avg (average); cos (cosine); cosh (hyperbolic cosine function); exp (exponential function); ln (natural logarithm); log (logarithmic function); log10 (common logarithm); max (maximum value); min (minimum value); sin (sine); sinh (hyperbolic sine function); sqrt (square root); sum (total); tan (tangent); tanh (hyperbolic tangent function)

Options for: QJ71MES96IT

Model Number	Description	Stocked Item
MESITLCLDTBS	MES IT Local Database	S
MESITTRNSSQL	MES IT SQL Transport	S
MESITTRNSORCL	MES IT ORCL Transport	S
MESITTRNSDB2	MES IT DB2 Transport	S
MESITTRNSSIB	MES IT SIB Transport	S
MESITTRNSWMQ	MES IT WMQ Transport	S
MESIT2GBCF	MES IT 2GB Memory Card	S
QJ71MES96IT	MES Interface IT Module	S
MESITDVC-1	MES IT 1 Device Connections	S
MESITDVC-5	MES IT 5 Device Connections	S
MESITDVC-10	MES IT 10 Device Connections	S
MX-MES-INTRFC-IT	MES Interface IT Workbench	S